The American CINEMATOGRAPHER

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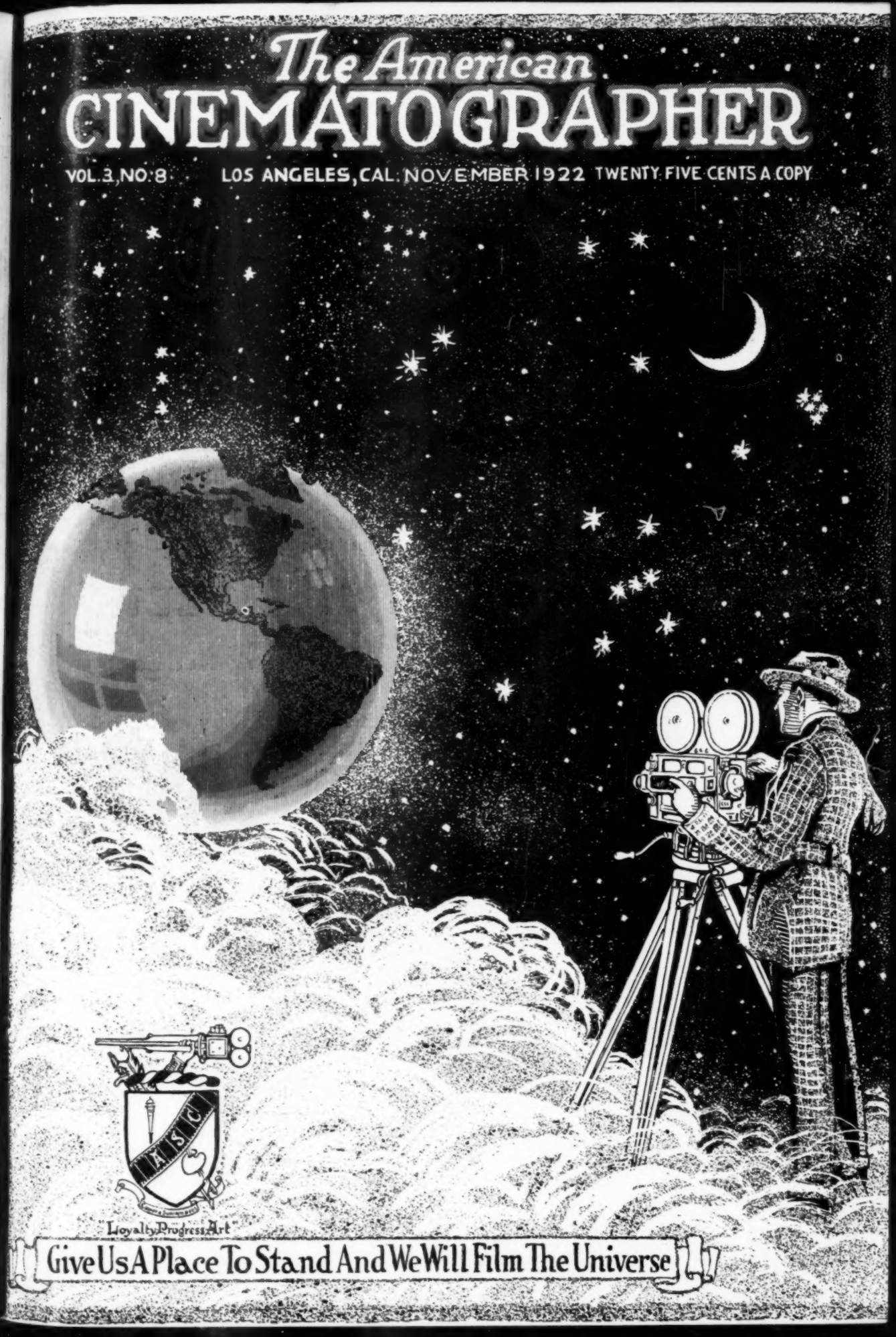

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Vol. 3 NOVEMBER, 1922 No. 8

The American Cinematographer

The Voice of the Motion Picture Cameramen of America; the men who make the pictures

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An educational and instructive publication espousing progress and art in motion picture photography while fostering the industry.

We cordially invite news articles along instructive and constructive lines of motion picture photography from our members and others active in the motion picture industry. All articles must be signed by name and address of writer.

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Care and Preservation of Motion Picture Negatives

Method whereby negative may be fully preserved is given by Eastman expert.

By George A. Blair

Proper care is outlined--from transactions of Society of Motion Picture Engineers.

In view of the enormous increase in the production of motion pictures during the past few years and of the large financial investments entering into and represented in the negatives, their preservation for future use is of the utmost importance. This also applies to negatives of special or important events which it is desired to perpetuate and where re-taking is not possible.

Study of old negatives of which the emulsion was coated on glass, known as the dry plate process and still in general use, likewise of old photographs where the image was impressed in a collodion or gelatine emulsion coated on paper, proves that a silver image in gelatine will keep almost indefinitely, provided certain conditions in the manipulation are complied with.

No Long-Standing Records

The making of photographic images with an emulsion coated on nitro-cellulose base is more recent than the glass and paper processes and, as a consequence, there are no records of long standing which may be considered as having established a comparison between the stability of film and glass negatives.

Motion picture negative film having a nitro-cellulose base was first made in 1889 and as the emulsion was not then, nor for a considerable time afterward, as sensitive as the present emulsion, it was also used for printing positives until about 1895, when positive film was first manufactured commercially, though it was not until some years later that the use of either negative or positive film began to be of consequence.

Demand Increased

However, during this period there had been an increasing demand for negative film in roll form for the making of snap shot negatives and as this film was basically the same as motion picture negative film and received the same general manipulation, we are able to form an opinion as to the comparative keeping qualities of film and glass negatives, except for such differences as might be affected by the customary method of storing glass plates and cut film negatives in special paper enclosures, whereas motion picture negative film has always been wound into a tight roll from which air is excluded.

Long-Term Preservation Possible

As a result of the experience gained from the storage of negatives cut from the roll of film as used in the kodak, which had been thoroughly fixed and washed, we know that preservation over long periods of time is possible.

The constituent parts of motion picture negative film are a cellulose nitrate base and a gelatine coating which contains the silver image. The cellulose nitrate base consists chiefly of nitro-cotton and this substance, while apparently stable, is subject to a very slow change with time, while the gelatine containing the emulsion, if properly fixed, washed and dried, is absolutely permanent.

Effects of Temperature

The change or deterioration in the nitro-cellulose base will be negligible if it is stored at a consistently low temperature, but more gradual if subjected to high temperature, which causes the release of nitrogen peroxide which affects the physical properties of the base and is liable in time to attack the emulsion and gradually destroy the silver image.

On the other hand, insufficient fixing and failure to wash the film thoroughly to remove all traces of hypo will greatly accelerate this change and may result in a yellow discoloration of the gelatine coating. The importance, therefore, of extreme care in fixing and washing will be realized and, as a further precaution, after the ordinary fixing bath, re-fixing in fresh hypo. Thorough washing with a final rinsing in distilled water is recommended.

Storage Necessities

When negative film is prepared for storage it should be wound on wooden cores, wrapped in chemically pure paper and placed in a sealed container, preferably of fibre or hard rubber, which in turn should be enclosed in a metal box, but no metal should be permitted to come in direct contact with the film during the storage period.

Atmosphere

In view of the effect of temperature on film base the container should be stored in a cool but not too dry atmosphere or such as would ordinarily prevail in a well constructed and properly ventilated film vault. Ideal conditions might be compared to the temperature ordinarily prevailing in a household refrigerator. Under such conditions there would be little to fear either from a change in the physical properties of the base or the gelatine coating or from the possibility of shrinkage to a degree which would affect the perforation pitch and cause difficulty in printing future positives.

Use Is Beneficial

The use of negatives for making reprints at intermittent periods has a beneficial effect as far as the stability goes, as this permits the escape of any small trace of gases which may have accumulated, but under all circumstances, especially with negatives which are inactive for long periods, there should be careful examination by re-winding at least once a year, so that any change may be detected and the film copied, because once deterioration has started it is difficult to check it.

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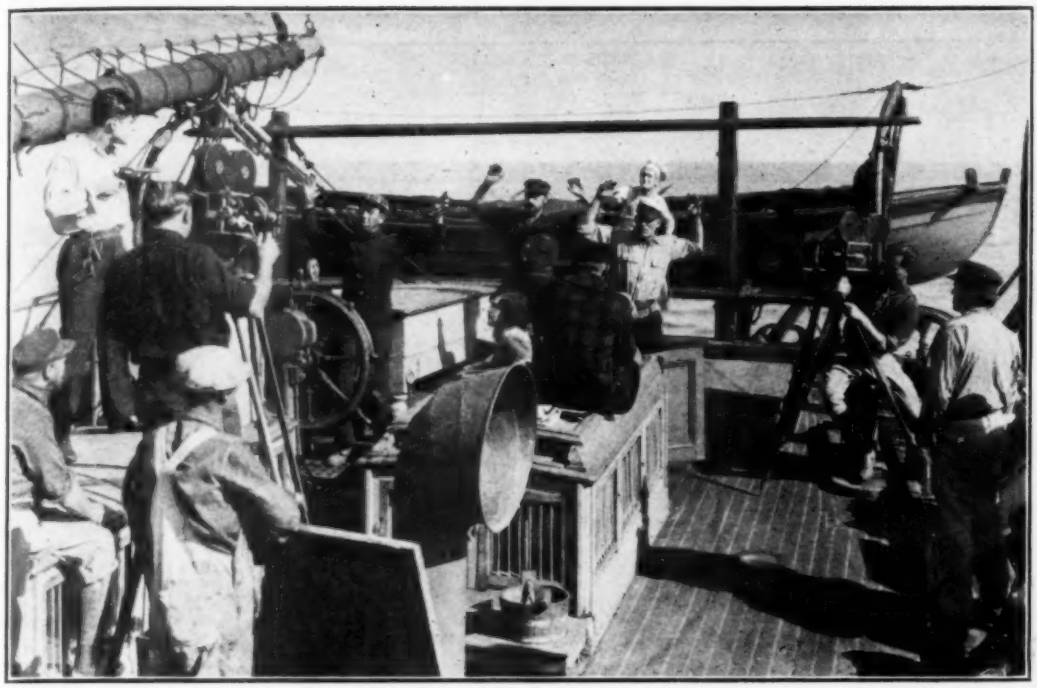
for December—

the contents of the American Cinematographer will include among other superior features:

"Education and 'Pictures'" by DR. REMSEN D. BIRD, president of Occidental College, Los Angeles, and one of the foremost educators in America;

the final installment of "Graininess in Motion Picture Positives and Negatives," by ARTHUR C. HARDY and LOYD A. JONES, Eastman research authorities;

—and there'll be other features.



In order to direct three closely related scenes simultaneously, Willat uses a mirror to trace actions of players in the two scenes behind his back and gives directions accordingly. Robert Kurrie, A. S. C., is presiding over the camera at the left

Hunting Whales With Cameras

Whales and tug boats misbehave but do not prevent A. S. C. member from filming stirring scenes in pursuit of sea giants.

Whale hunts, which resulted in the capture of several of the largest whales ever towed into a Pacific port, were photographed by Robert Kurrie, A. S. C., and his associate Metro cinematographers during two trips, the first of seven days and the latter of four weeks, to Northern California waters, during the filming of "All the Brothers Were Valiant," which is being directed by Irvin Willat.

Pursuing whales with a camera, according to Kurrie and others who made the trip, is even more exciting than harpooning the sea giants. Inasmuch as Kurrie filmed the actual harpooning as well as the chase, it is evident that his experiences were doubly thrilling—even if he and his companions had not escaped a serious boat crash.

Biggest Ever

Kurrie's camera caught the exciting details of the harpooning of a 57-ton humpbacked whale, believed to be the largest ever caught in Pacific waters.

Not every day were Kurrie and his associates fortunate enough to sight prey, but when they did sight the monsters, the excitement which ensued made up for their fruitless hours of sea tossing. Two of the most exciting days came during their visit to Trinidad, which, located a short distance north of Eureka, California, is the leading whaling station on the Pacific Coast.

Kurrie gives the log of the two days, in part, as follows:

"We set out aboard the 'Port Saunders' one Wednesday morning. She is a 65-foot round-bottomed whaler, built in Stockholm. Her crew numbered eight. They were mostly Norwegians.

"That day we landed three humpbacked whales and towed them all back to port. The crew gets $100 for every whale brought into Trinidad, so you can see they have to do a pretty steady business during a comparatively short season in order to make enough money to provide for the entire year.

"Luckily none of our company was troubled with seasickness. This was due probably to the thrilling work before us. We had cruised about two hours from Trinidad when we sighted our first whale and gave chase. It was not difficult to get within harpooning distance—the limit on this boat was 150 feet.

Nine Pounds of Shrapnel

"The gunner, stationed at his gun, which was mounted on a platform in the bow, pulled the trigger, releasing the 92-pound harpoon which carried in its head a nine-pound charge of shrapnel. The harpoon pierced the side of the bull. When it was well in, the shrapnel exploded, quickly killing the whale.

"When it had stopped pounding the water, it was pulled alongside and lashed to the boat. Then a hollow harpoon was driven into the animal and air pumped into it. This made the carcass swell like a big balloon. In this condition it was possible to tow it back to port.

Unlucky For Whales

"We cruised all of Friday without hearing the cry, 'There she blows!' But along toward dusk the captain sighted two whales blowing some distance off our port bow. We set out in pursuit. There was a giant of a cow and a good-sized bull. The captain hoped to get both.

"When they saw they were being chased they fled, blowing, diving for 10 minutes at a time, rising to the surface again and leaping from 30 to 40 feet into the air. You can see it was hard to follow proceedings with a camera. Finally we closed in. The first shot drove the harpoon in the tail of the cow, and, the wound being slight, away she went.

A Smiling Moment

But all the moments in the company's two trips to Pacific waters off Northern California were not smiling moments

She was trying to escape us, but she could not escape the camera. The steam engines were set at half speed astern as the whale towed us forward at about 10 miles an hour. A sperm whale could tow a boat the size of the 'Port Saunders' 25 miles an hour.

Devastation of Whales

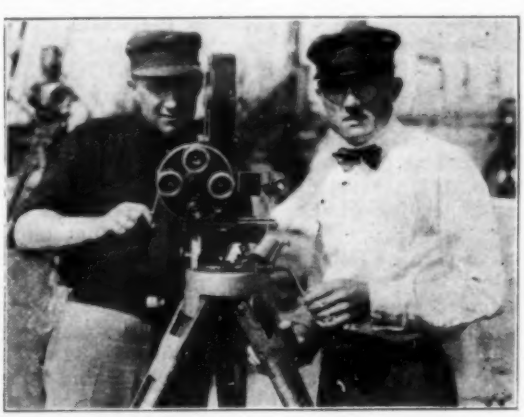
"As we followed the gun was re-loaded with a harpoon attached to our second coil of rope. The bull stayed close to the cow. The captain wanted to get close enough to him to land him, too. We chased and were towed by that whale for three-quarters of an hour, but not once did the bull come close enough to make a shot at him worth the risk. When it became so dark that we were in danger of losing both whales, the gunner drove the remaining harpoon into the cow. We soon had her alongside. The bull, evidently sensing the fact that his companion was done for, fled.

Back Sliding Boats

"Photographing all this was not easy. On both days there was a heavy sea and a great deal of the time waves broke over the deck where the cameras were set up. It was difficult to lash them down, for the deck was made of steel and we couldn't drive cleats into it. We had to adapt land conditions to the ocean as best we could. The boats were made with round bottoms, so that if a whale should decide to dive under and raise himself up, the boat will slide right off his back—there being no sharp keels to catch.

"And you can take it from me that when the 57-ton whale went underneath the boat, pulling a rope four and a half inches in circumference, when two brakes, a strong winch and a heavy spring were strained to the utmost to hold it in—it made us glad the boat was manned by men who knew their business. The boat often was pulled so far down to one side that the edge of the deck was submerged. At times we had all we could do to keep our cameras from being wrested from our control and washed away."

On the following day, after the sea giant was towed back to port, the commercial process to which her carcass was subjected was filmed. The operation included the stripping of the whale bones; and the removal of the blubber, which was later boiled. The oil was then put into casks. Twenty-seven seamen were employed in the task, which required appreciable skill.



Robert Kurrie, A. S. C., chief cinematographer, and Irvin Willat, director, in whaling adventures

To 'Frisco Bay

Activities of the second trip centered about San Francisco bay. For the four weeks' work, the Metro company was fortunate enough to obtain the use of the "Carolyn Frances," which, one of the last whaling schooners of the old order, is to be converted shortly into a trading vessel. The "Carolyn Frances" was sought for the purpose of reproducing the

(Continued on page 22)

Graininess In Motion Picture Positives And Negatives

Instrument to measure graininess is explained by Eastman Kodak research authorities. Article concluded next month.

By Arthur C. Hardy and Loyd A. Jones

Facts important to all interested in cinematography are revealed. From transactions, Society Motion Picture Engineers.

When a photographic image is examined by means of a high-power microscope, it is found to consist of a large number of grains of black metallic silver. These grains are all too small to be seen by the naked eye, although a clump consisting of many grains may be just perceptible. However, when a motion picture is projected on the screen in the motion picture theater, the whole picture and, of course, each individual grain or clump of grains is greatly magnified, in most cases as much or 200 times or more. Under these conditions the graininess of the picture is usually apparent. If it were possible to stop the projection machine without injury to the film, it would be found that a single picture was exceedingly grainy. The decrease in the graininess in ordinary projection is due to the rapidity with which one picture follows another on the screen. The grains in one picture never lie in exactly the same position as in another and the result is an apparent boiling or seething of certain areas of the picture, which at times is very objectionable.

Factors

Many opinions as to the causes of this phenomenon have been expressed by photographic workers. Such factors as the characteristics of the photographic materials themselves, the reducing agent used in the developing solution, the temperature and dilution of the developing solution, and the treatment of the developing materials, in the fixing, washing and drying processes have been considered responsible for this lack of homogeneity. The work reported upon in this paper was undertaken to establish definitely the relation between the various factors involved in the preparation of motion picture positives and the characteristic of such material usually referred to as "graininess."

"Graininess"

Many investigators in the past have studied the size and distribution of the individual silver grains in the emulsion, but their results do not apply, unfortunately, to the present problem. It is not necessarily true that the photographic procedure which produces the smallest grains will also produce a minimum in that property of the photographic deposit which we call graininess. The term "graininess" is used to designate the effect of inhomogeneity exhibited by the photographic deposit due to the presence of groups or clumps of silver particles. It is the clumping of the grains which limits the size to which a picture can be enlarged before the graininess becomes apparent.

Up to the time that this work was undertaken, no method for the measurement and numerical specification of the graininess of a photographic deposit was available, it being customary to obtain qualitative evaluations by submitting a given picture to inspection by qualified judges. Such procedure obviously is not entirely satisfactory since determinations made in such a way are subject to wide variation owing to personal opinion nor is any means provided for recording the results quantitatively. In order to reduce the measurement of graininess to a scientific basis, it was necessary to develop a logical method and to build an instrument for the measurement of this factor. Space will not permit of a complete treatment of the theory of the subject and for a more detailed discussion the reader is referred to other publications (The Measurement of Graininess in Photographic Deposits by Loyd A. Jones and Noel Deisch, Jour. Frank. Inst., November, 1920; p. 657).

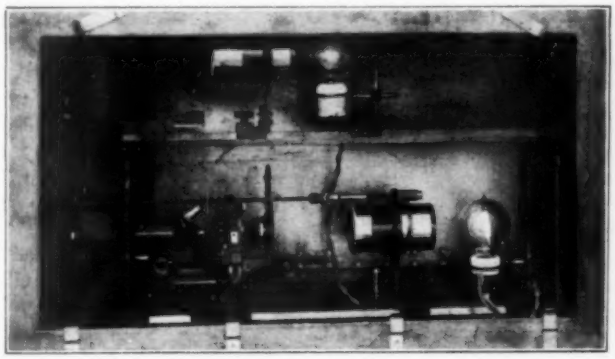


Fig. 2—Photograph of mi croprojection system of graininess instrument

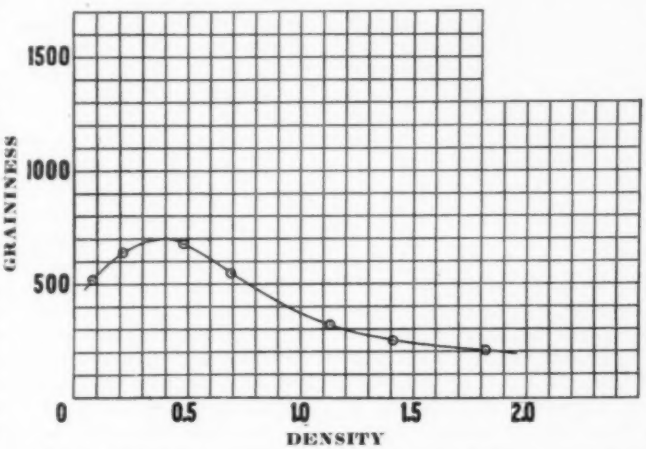


Fig. 4—Graphic representation of the graininess of strips in Fig. 3

The Instrument

The instrument constructed for this purpose consists briefly of a microscope system which projects a magnified image of the photographic deposit on a smooth white screen. The screen is observed in a mirror which operates along a track, permitting the length of the optical path from the eye of the observer to the screen to be varied at will. In making a determination of graininess, the mirror is driven out until the granular structure of the screen image is no longer visible. The assumption is then made that the graininess of the photographic material is proportional to the distance from the eye of the observer to the screen for this position of the mirror, provided that all the factors controlling the ability of the eye to recognize fine detail work remain constant. A diagrammatic sketch of the apparatus is shown in Fig. 1.

The photographic material is placed on the microscope substage at 0 and a magnified image is projected onto a screen or magnesium carbonate (S-c) by means of the microscope system and pointolite lamp (S-1). M is a mirror which is mounted on a carriage which runs along the track T. The eye of the observer is placed at the eyepiece at E and by means of a template and lever (L), the observer is always able to see the screen in the mirror. The mirror is driven along the track by means of a steel tape (B) which carries a scale indicating the position of the mirror. A photograph of the apparatus is shown in Fig. 2.

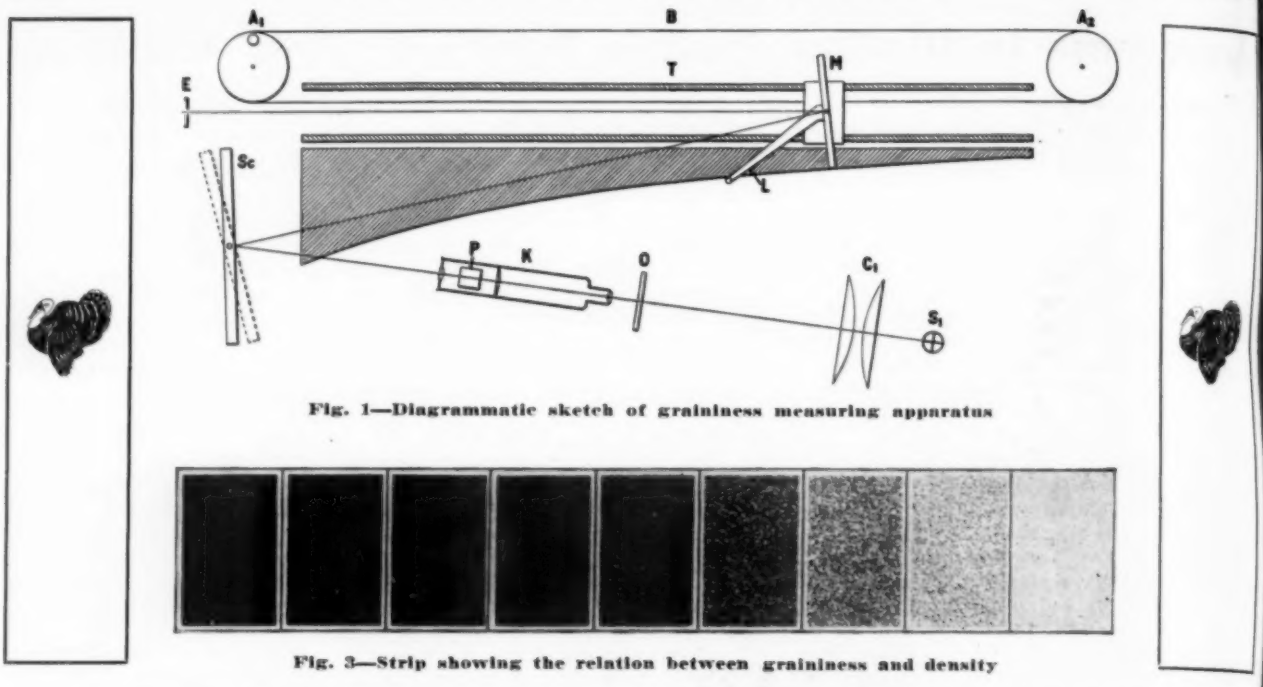


Fig. 1—Diagrammatic sketch of graininess measuring apparatus

Fig. 3—Strip showing the relation between graininess and density

How to Measure Graininess

The procedure in measuring is to place the photographic material on the stage of the microscope and focus the enlarged image on the magnesium carbonate screen. The eye is then placed at the eyepiece and the mirror slowly driven out until a point is reached where the graininess of the material is no longer apparent. To preserve the same criterion of smoothness for all observations, the image of the photographic material is made to fill only half of the field of view, while the other half is illuminated by white light of adjustable intensity. In this way the observer has before him at all times a perfectly uniform area which is adjusted to the same average brightness as the image itself. Having determined the distance at which the image blends into homogeneity and cannot be distinguished from the comparison field, the position of the mirror is read on the steel tape and the total distance from the eye to the screen is calculated.

If the visual acuity of the observer, that is, his ability to recognize fine detail, remained constant under all conditions, this distance could be taken as a measure of graininess without further correction. However, it is well known that the visual acuity of the eye does change with such factors as the adaptation level,† the diameter of the pupil, fatigue, practice and the general physiological condition of the subject. The changes in visual acuity would cause a corresponding change in the blending distance for the photographic material and, therefore, alter the measurements of graininess proportionately.

Difficulty Is Solved

To overcome this difficulty, a printer's halftone screen is placed on the stage of the microscope and the mirror driven out until this also appears homogeneous. The distance from the eye to the screen for this position is again measured and is used to correct for changes in the observer's acuteness of vision. By dividing the readings of the blending distance for the photographic material by the corresponding distance for the halftone screen used under the same conditions, a factor is found which is quite independent of all changes in visual acuity of a single observer and, in fact, makes it possible for two different observers to agree on the graininess of a photographic material, although the actual blending distances obtained by the two for the photographic material may be very different.

Experiment

To prove that this apparatus actually measures the "graininess" of a photographic material as it is known to the motion picture photographer, the following experiment was performed. A typical negative material was selected and given a series of exposures in a sensitometer (a device for giving a graded series of exposures to a photographic material). It was then developed, fixed and washed in the usual way so that there resulted a "strip," consisting of a series of densities from a scarcely perceptible deposit to almost complete opacity. A photo-micrograph was then made of each step of this strip, using the same exposure and development conditions throughout. The prints, mounted in the proper order, are shown in Fig. 3. It will be seen that this figure represents the original negative magnified about 100 times. The graininess of the very low densities approach a minimum as, of course, it must in a photographic deposit containing few developed silver grains. The graininess of the very high densities also approaches a minimum as the deposit becomes so nearly opaque that the small interstices through which the light is able to penetrate are too small to be resolved except under exceedingly high magnification. It will be noticed that the maximum graininess is in the neighborhood of the third step. This can easily be tested by viewing the figure from such a distance that the graininess of the other steps cannot be seen. At this distance the graininess of the third step will still be visible. The same strip was then placed in the graininess apparatus and the graininess factor of each step determined.*

A curve showing the graininess plotted as a function of

(Continued on page 20)

† The adaptation level depends largely on the average amount of light falling on the retina. The eye adjusts itself to different brightness conditions and the particular state of the eye under given brightness conditions is referred to as the adaptation level. Throughout this investigation, precautions were taken to work as nearly as possible under the same brightness conditions in an artificially lighted room. The adaptation level was therefore approximately constant.

* The graininess factor is the ratio of the blending distance for the photographic material to the corresponding distance for the printer's halftone screen multiplied by an arbitrary constant. When a screen of 500 lines per inch is used and when the same magnification is used for both the photographic material and the screen, the value of the constant is 508. Thus, if D-p is the blending distance for the photographic material and D-s is the blending distance for the screen, the graininess factor (G) is:

$$G \text{ equals } 508 \frac{D\text{-}p}{D\text{-}s}$$

Concerning Opportunity

By Victor Milner, A. S. C.

Superior art and workmanship must be eventually recognized, even though conditions are adverse.

On numerous occasions after witnessing a "preview" of a newly-finished production, I have overheard many cinematographers remark: "I wish that I had the opportunity to photograph a big production like that."

Now, suppose we look into the above and compare the "opportunities" of a cinematographer shooting for an independent producer with those of a cinematographer shooting on a "big lot"—that is, for one of the highly organized producing outfits whose output is assured of distribution.

Must Meet Requirements

The independent producer, in many instances, is not able to arrange for his release until he has finished his production. In nine cases out of ten, in order to be sold, the production must be able to stand up under the full criticism of the buyer, who must see the finished picture projected before he will consider buying at all. In other words, the buyer does not want to "buy a cat in the bag," and the producer must deliver the goods to him.

A Valuable Incentive

Therefore, the independent producer has every incentive to spur him in an attempt to produce as masterful a picture as possible. He has a natural desire, then, to get maximum results from his staff—to want to avail himself of all the knowledge, science and art of his aides.

The vehicle under production must have an entertaining story, perfect settings and perfect camera work. No production can have perfect camera work if the cinematographer is not given necessary advantages with which to work. Hence, the independent producer, in his own interest, usually gives the cinematographer every opportunity to do good work, and authority in the selection of a laboratory to handle his negative and sample prints.

Re-takes are not looked on as a crime, for on an independent production a re-take, is construed as a chance to improve.

The "Big Lots"

Now, let's observe the conditions which the cinematographer meets on the "big lots." Here the producer works from a different angle. He usually knows in advance what his returns will be on a program picture costing a certain amount to produce. He controls his own distributing system and many theaters.

All this the established producer with his own distributing system knows beforehand. He is not subject to the incentives which spur the independent producer for his own good. Genius of organizaion will make amends for an inferior product and eventually bring returns on the right side of the ledger.

Re-takes Disfavored

A schedule is laid down for a production, and it must be followed as closely as possible from day to day. Shots below par, which under variable conditions always occur and cannot be avoided, are very often allowed to pass uncorrected, as re-takes are frowned on as a loss of time. It's the same old story—speed, speed, speed. And speed and art don't associate very well.

Day and Night Work

The producer engages a director to direct for a flat sum, plus a bonus should he finish before a specified time. That means day and night work for the staff—and the cinematographer has to soak his eyes in boric acid to keep going. If there is no opening for the cinematographer at the time the picture is completed—after he has been performing two days' work in one—he is given the privilege of looking for a new job.

What about the laboratory work? Does the cinematographer with the big studios have any choice as to where to place his negatives? Usually not, because laboratory arrangements are usually made in those quarters where the best business deal can be effected.

Work Leads to Triumphs

We cannot all be "shooting" the big stars and big productions. The cinematographer's career, like those of other humans, has, between its lofty mountain peaks, valleys which, constituting the major portion of the cycle, must be traversed patiently and thoroughly from day to day.

We who are unfortunate must "carry on" and do our best. I know how you feel and I feel when our director comes on the set and mentions that he saw a beautiful production with beautiful photography last night.

Opportunity Demands Preparation

That particular production may have taken three months to shoot, against a program picture manufactured in 18 days.

We cannot, in our own interest, afford to despair under the load of unfavorable conditions. We must continue to do our best, for in doing so, we continue to improve our efficiency so that when "opportunity" does come, we are prepared to meet it as every good cinematographer would want to.

FILM EXPERTS DONATE SERVICES TO AID LOS ANGELES PAGEANT OF PROGRESS

Various branches of the motion picture industry responded whole-heartedly to the call of the Los Angeles Chamber of Commerce to give demonstrations of how pictures are made, before the crowds which patronized the Pageant of Progress, held recently for a fortnight at Exposition Park, Los Angeles.

Scenes were filmed before the public just as they are in the regular course of production at the studios, most of which have rigid rules against visitors being allowed on the property, so that many of those who attended the exposition saw for the first time "just how pictures are made."

Sets and all were constructed on the spot. After this the filming began. Among the A. S. C. members who donated their services were Fred W. Jackman, Jackson Rose, John Arnold, Allen Davey, Homer A. Scott and Reginald Lyons. George E. Reehm and Roy Clements, of the Motion Picture Directors' Association, were prominent in making of arrangements for the affairs. Lon Ham was in charge of properties. Universal donated the Northwest trading post set; Hal Roach, the bake shop, and Paramount, the drawing room. Lights were furnished by Goldwyn, Universal and Pickford-Fairbanks.

Among others who donated services were Neal Burns, Charlotte Stevens, Gloria Swanson, Thomas Meighan, Theodore Roberts, Mitchell Lewis, Helen Ferguson, Melbourne McDowell, Russell Simpson, Pat O'Malley, Priscilla Dean, Wallace Beery, Gladys Walton, Jack Holt, Wanda Hawley, Louise Fazenda, Chester Conklin, Monty Banks, Marie Prevost, Kenneth Harlan, Bert Lytell, Betty Compson, Claire Windsor, Thomas McGuire, Mary Culver, Gene Nash, Earl Schenck and Carl Miller.

The Editors' Corner

—conducted by Foster Goss

FOR CONSIDERATION

Despite the expansion and popularity of motion pictures, the public has not yet learned to regard the well-made production as the result of the combined efforts of a corps of experts. The "one-man" idea—that a single star or producer is the brains of the entire production—still persists.

The successful motion picture is no more a "one-man" affair than a consistently successful football team can be a "one-man" organization, even though some star or coach may monopolize attention with such a contingent.

"Team work" for success applies in motion pictures just as the maxim holds true in other quarters. And the eminently successful productions have evolved from such co-operation. It may be that some stars or producers have attempted to make themselves the "know all" within their organizations because they were paying the salaries, seeking to move about the members of their staff as so many puppets without consulting or making the most of the intelligence of the people in their employ, but such individuals if they have not already, will eventually flounder by the wayside. This does not mean that the employer should be ruled by his employe, but he who boasts that he pays the salaries owes it to himself at least to encourage his employe—if this term must be used—to exercise his creative ability to the utmost. But a man whose chief virtue is to take orders is not very often animated by creative ability.

The noteworthy motion pictures are those of which the man at the helm has recognized the ability of his aides. It is his policy to make some person responsible and accountable for the work which falls within a certain department. The man at the helm is the man at the helm of course, but he is not endeavoring to give instructs on how to oil the engine or how to save coal in stoking the boilers when he should be piloting the ship.

Successful productions result from the work of the staff highly trained and specialized in their various callings. Among these experts the cinematographer is a major factor. His duties are pivotal. If his efforts fall short, the picture suffers proportionately.

Cinematography is considered too prevalently as a mere mechanical process. To the lay mind, the cinematographer merely grinds a crank—he doesn't do anything else, does he? The average person does not realize that the master cinematographer must possess the instincts of the artist as well as practical scientific knowledge. He must be thoroughly familiar with the arrangement of lighting effects, else how will the photographed players appear on the screen? He is called upon for multiple exposure work of the most intricate nature. He must be able, in order to save expenses, to photograph miniatures so that they appear like famous buildings, which, perhaps, are located three thousand miles away. A rehearsal of his duties in detail would require far more space than is available here.

But what is he to the public? Simply the man who grinds the crank.

Why?

Films are seen on the screen but commented on through the medium of the printed page. The average person's information as to the making of a

picture comes from the accounts he reads in magazines and the dramatic sections of newspapers. His opinions are prompted and formed thereby. And the cinematographer does not occupy his deserved place in those opinions—the conception of the masses.

How often has the person interested in the cinema read the review of a motion picture wherein the artistic achievements of the cinematographer are recognized as they should be? Seldom. If the truth be known, the average dramatic critic probably does not have an authentic working knowledge of the production of a motion picture. These are not accusations, but facts, and no offense is intended. It is not the fault of the critic that he has never been able to visit a studio and observe the actual filming of a picture. Of course, he realizes hazily that a production must be photographed, but in reviewing a picture he comments on that which he knows about, that which is visible. Unlike the stage, the presentation is not made in person. So, his work strange to the person who largely determines the public film knowledge, the cinematographer does not receive the recognition to which he is entitled. Happily, this is not generally the case in Los Angeles and possibly New York, where the proximity of studios make it possible for critics to be thoroughly familiar with the process of production.

Independent of the reviews, the public's information of motion picture production is absorbed to a substantial degree from the accounts which appear in the dramatic columns—and the person who publishes such accounts likewise receives much of his information from them. But whence come such reports? They are broadcasted to newspapers by studio press departments, dominated by interested parties who may falsely think that, if any recognition for achievement is to be given, they are the persons who should receive it.

Falsely placed credit is unjust to the person to whom it rightfully belongs, if for no other reason than it is untruthful.

The American Cinematographer believes that the cinematographer, major factor in motion picture production, should be recognized for what he does. He is entitled to have his name mentioned in the review if his connection with the production in question can be ascertained at all. The abstract mention that the photography is good, bad or indifferent is not complete, and no publication prides itself on publishing incomplete reports.

Each week the American Cinematographer is providing every dramatic critic in Los Angeles with a list of the names of cinematographers who photographed productions to be shown at Los Angeles theatres during the following week. Much time and effort is put forth in the compilation of this list, since very often the cinematographer is not credited through the regular channels. If it were possible to determine far enough ahead of time local exhibitions in other communities, the American Cinematographer would endeavor to supply a similiar list to every critic in the country. Meanwhile, trust must be placed in the good will of studio and theatre officials, and in the critics. The trust should not be misplaced.

Every man should have the right to earn an honorable livelihood.

Power makes some men careful, others foolish.

Intimate Views of Motion Picture Conditions in Soviet Russia

Denationalization decree results in substantial increase in number of cinema theatres.

By John Dored, A. S. C.

First-hand information reported by writer, who, now an A. S. C. member, is stationed at Riga, Latvia.

I am keeping in touch with my fellow cinematographers in Soviet Russia and just now I received a letter from one of them, in which the present-day situation of moving picture business in that country is illustrated. I am reproducing, hereafter, the contents of that letter for the benefit and information of American cinematographers.

With the new "economical policy" of the Soviets, the cinema business was denationalized by a decree in December, 1921. However, many cinema theaters continue to be operated in the hands of Soviet organizations. Until December, Moscow had six cinema theaters, but in June, 1922, there were forty in operation already. The effect of denationalization in the provinces has not become manifest as yet, judging from the very limited demand for projection installations. The fact that the authorities of the province usually do not recognize the decrees of the federal government and do as they please must be considered seriously. Since January, 1922, there have been in operation in Moscow two private, one semi-private and one official film exchange, all of them working with old and worn out stock. Old copies bought in foreign countries at a cheap price, in a few instances, are the only additional prints secured. New prints are not purchased, because under the existing projection conditions they would never return their price, as the projecting outfits are entirely worn out and the picture would not endure more than 15 to 20 exhibitions. The newly-made "projectionists" are also adding their share in spoiling the copies. New projection machines and new parts for the old ones do not exist in Russia. Now, when a new theater is opened, all kinds of old junk is gathered to mount one outfit.

The renting of pictures to the provincial theaters is hampered, first because the transportation is very irregular and unsafe, resulting in the post office and railroads not taking any responsibility for the goods; and, second, because in most cases the prints are never returned to the exchange.

Legal and Illegal Thefts

Prosecution is impossible, because nowadays all Russia is living from legal and illegal thefts. The newly-born commercial enterprises under the new "economic policy" of the Soviet itself is already undergoing a serious crisis.

Reports from the province indicate that business after business is closing down and that life in all branches is rapidly nearing a complete standstill. All these circumstances indicate that there is no hope for revival of cinematography in Soviet Russia.

Many Starve; A Few Feast

The liveliness of Petrograd and of Moscow must not be taken as example, where, as the Russian proverb, "Feast in time of plague," is amply demonstrated. From 75 to 90 per cent of the Russian population have a hard time in tossing about in search of any kind of food and, therefore, there is very little time and room left for pleasure, i. e.: cinema.

Rentals Require Mint

The renting prices for a program of three days' run are as follows:

For Russian and foreign pictures in fairly good condition, from 250 to 400 million Soviet rubles;

For very old prints, from 100 to 200 million Soviet rubles;

For new prints from 450 to 600 million Soviet rubles.

A Million for a Theatre Ticket

The admission prices in cinema theaters are ranging from 400,000 to 1,200,000 Soviet rubles. The present rate of exchange of one American dollar equals 8,000,000 Soviet rubles.

What Situation Would Mean Here

While such admission prices, if based on the rate of exchange and counted in American money, may seem very cheap, they are not to the Russians, who surely can see no humor in the situation. Imagine, in America, to have to pay something between $400,000 and $1,200,000 to see a single motion picture; or the exhibitor being compelled to pay approximately 100 to 600 million dollars for a three-day engagement.

At present there are in existence about 40 cinemas in Moscow, 30 as already mentioned; 30 in Petrograd, and about 200 in the provinces.

Laying Foundation Now For Future

Regardless of this state of affairs in Russia, many far sighted foreign business men, in all lines of trade, are making elaborate preparations to invade the Russian market as soon as the political conditions will radically change there. With this aim in view, they are installing branch offices in the Baltic States, particularly in Riga, Latvia, and in Reval, Estonia, and are keeping in storage considerable quantities of goods, thus being ready for business at the very doors of Russia.

Germans Busy

The same possibilities await moving pictures. However, films are almost exclusively represented by the Germans, whereas, the other branches of trade are represented by all nationalities.

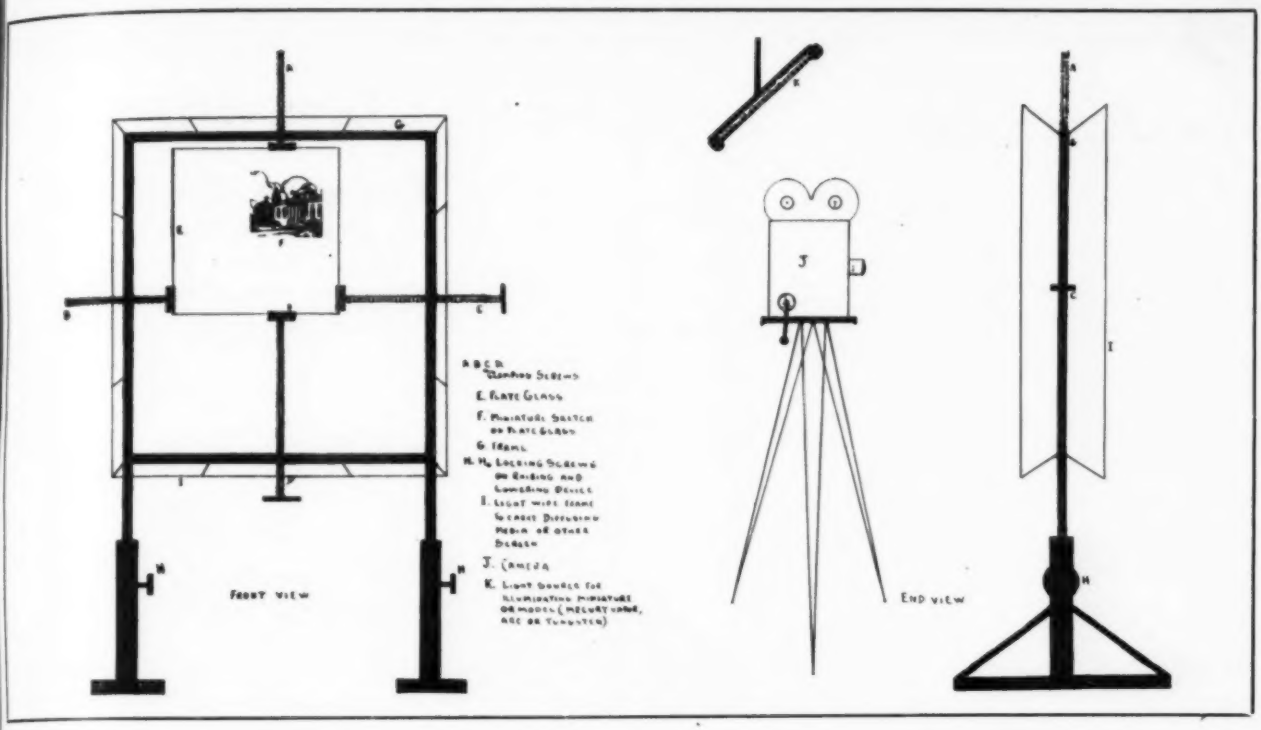
Only one French concern, under the name "Pathe-Nord," with a capital of 10,000,000 francs, has installed a branch office in Riga, with a big stock of projecting outfits and pictures at hand, especially destined for the coming extensive Russian market.

What is the matter with the American motion picture producers, are they considering the Russian field as valueless and are they going to leave the Germans to dominate over the Russian market?

After a courageous battle extending over a period of weeks, Jess Hilburn, wife of Percy Hilburn, head cinematographer for the Reginald Barker company, died Tuesday morning, October 24, from complications which set in following a long siege of pneumonia. The sad news of Mrs. Hilburn's death was a shock to the motion picture industry in which she has many friends.

TONY GAUDIO, A. S. C., CALLED TO NEW YORK FOR DAVIES FILM

Cosmopolitan Productions regard Tony Gaudio's cinematography so highly that they have prevailed on the Schenck organization to lend Tony to film a Marion Davies vehicle, while Norma and Constance Talmadge are touring Europe. Tony has left for New York.



Miniatures and Models for Motion Picture Use

By Dr. Alfred B. Hitchins
F. R. P. S., F. R. M. S., F. C. S.
Member of Society of Motion Picture Engineers

Device with many possibilities is described by director of Ansco Research Laboratory.

The device illustrated was designed to facilitate the use of miniatures and models such as are frequently used to supply extra detail and embellishment for the motion picture, either for the sake of economy, where, for instance, the scenario calls for the introduction of a nationally known landmark or object far removed from the scene of taking, or for greater artistic effect.

The distant skyline of a city, a bridge, a group of buildings, a mountain range, the dome of a building, in fact, any object which is intended to be stationary during the taking of the scene and in front of which no action is supposed to take place can be joined on or blended into the main scene so that the results, when projected on the screen, are convincingly realistic.

Two Methods

Generally speaking, two methods may be used—either the detail to be introduced may be painted in miniature on plage glass or an actual model of the object may be constructed; the photographic procedure in either case will remain the same.

Some details are more satisfactorily introduced by means of the painted miniature; others are better rendered by using the constructed model. The method used will necessarily be governed by the conditions encountered.

The proper blending in or joining on of introduced detail is dependent on the size, color, individual lighting of the model or miniature, and its proper placing in the optical path of the lens, so that the image of the main scene and the image of the model or miniature may be combined or brought together at the focusing screen in proper relationship as regards size, place and perspective.

Optical Principle

The optical principle involved is quite simple and depends on the fact that the size of the image formed by a lens is governed by the distance of the object from the lens and with a two-inch lens working at F-5.6, an average operating condition, the depth of field is so great that objects placed at close range and far away are all rendered sharply enough for practical purposes. The hyperfocal distance (based on 100th-inch circle or confusion) of a two-inch lens at F-5.6 is six feet. In practice all objects from five feet to infinity are rendered sufficiently sharp. Now, supposing that with such a lens condition we are photographing a set 40 feet away and we introduce into the path of the lens a model or miniature five feet away, then the image or size ratio is one to eight, in other words, a miniature with a one-foot base line will be thrown on the focusing screen of the same size as an object with an eight-foot base line in the main set. Based on the size of the motion picture—1 inch by ¾ inch—the lens at 40 feet will take in a rectangle 20 feet by 15 feet and at five feet a rectangle of 2.5 feet by 87 feet,* so that if miniature detail painted on plate glass is the mthod chosen the outside dimensions of the plate glass need not be greater than three feet by three feet, as with propr placing of the miniature plenty of surrounding clear glass will be left to photograph through and the outside edges will be beyond the field embraced by the lens.

Purpose of Device

The function of the device is, of course, to suitably interpose between the lens and the main scene a miniature or model properly placed as regards position, height and distance, so that it may be photographed at the same time as the main scene and in proper relation thereto. The front view of the device indicates fairly clearly its purpose. The frame "G" is constructed of two-inch by two-inch wood and is six feet square inside dimensions. The legs or extensions of the frame are rounded and encased in metal tubes, which in turn slide into metal tubes forming part of the base, thus giving a telescopic joint which can be clamped at any desired height by means of the locking screws H.

The square frame is fitted with four clamping screws,

* Hitchins, A. B.: "A boundary scale for the motion picture studio." American Cinematographer, June 1922, p. 19.

(Continued on page 23)

This chart may be cut out and pasted together for reference.

Lens Angles
OF THE
Cinema Camera

Figured and Drawn by
Glenn Robert Kershner

Giving the focal field covered at various focal distances in both the horizontal and vertical angles.
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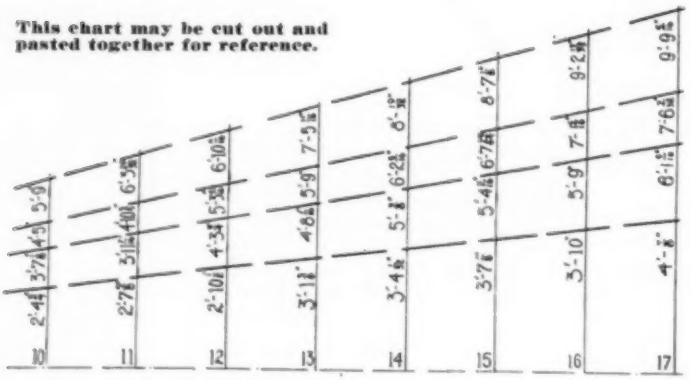
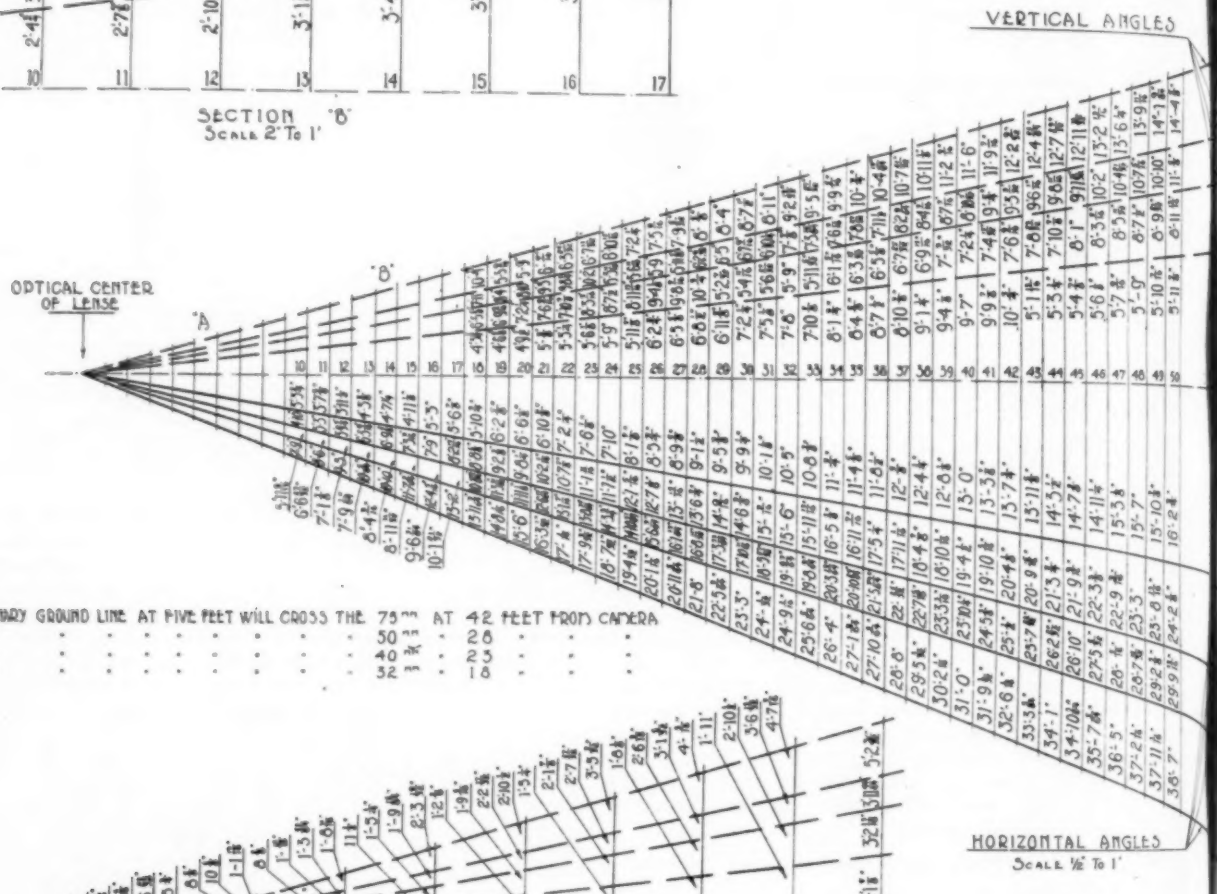
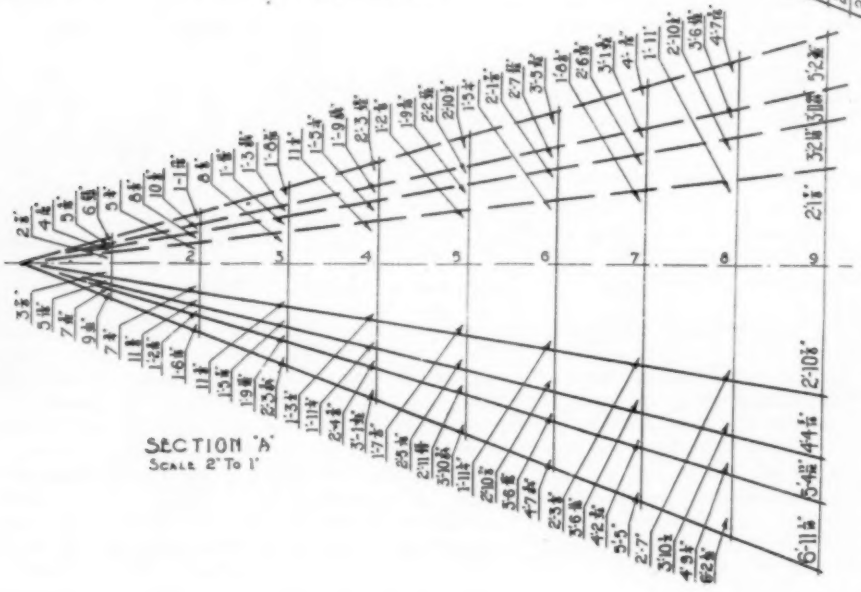


SECTION "B"
SCALE 2" TO 1'



AN IMAGINARY GROUND LINE AT FIVE FEET WILL CROSS THE 75 AT 42 FEET FROM CAMERA
50 28
40 23
32 18



SECTION "A"
SCALE 2" TO 1'

HORIZONTAL ANGLES
SCALE ½" TO 1'

NOTE

All horizontal angle figure cover entire width of lens

Vertical angles—entire heigh —until spread of 10 feet aft this only the upper half given—to find the entire ang —add the height of lens fr the ground.

Any additional information de sired may be secured by com municating with Kershner Goldwyn Studios, Culver Cit Calif.

NOTE — Same inch-foot scale does not apply reproduction in original

Electrical Illuminating Engineers photographed while inspecting construction work on new reservoir in San Franasquito canyon

Engineers Inspect New Power Plants

Operated by City of Los Angeles, new power plants to help provide studio electrical needs.

On Sunday, October 15, members of the Electrical Illuminating Engineers' Society journeyed to the San Franasquito canyon, 17 miles from Saugus, California, where they held their first picnic and inspected power plants Numbers 1 and 2 of the City of Los Angeles power system.

The power plants were a revelation to those who made the trip. The party was first shown through power plant No. 1, where the details of operation were explained by plant workers. The water which operates the plant is brought down from the famous Owens river.

From the Fairmount Reservoir, the water is directed through approximately eight miles of tunnel to the surge chamber above the power house, from which it comes down in pipe to the three 9375 K. V. A. horizontal turbines.

Nine-Day Capacity

The drop from the Fairmount Reservoir to the power house is about 940 feet, or approximately 400 pounds pressure per square inch. This reservoir has a capacity of about nine days' run, according to the present output of the plant. These turbines revolve at 200 revolutions per minute, and are governed by Lombard governors.

The generator voltage is 6600 volts, and may be increased through three banks of transformers to the transmission line voltage of 110,000 volts.

Second Plant

From this power house the illuminating engineers were taken to plant No. 2, six miles down the canyon. They were given a thrill when ridden up the incline railway, which mounts a 65 per cent grade. This railway is used for hauling supplies to the top of the hill, where they are at present building an impounding reservoir for the plant.

Six Miles of Water Tunnels

After being utilized in plant No. 1, the water flows through six miles of tunnels, and then, after a drop of approximately 515 feet, corresponding to 220 pounds pressure, is used in No. 2 to generate another 35,000 K. W. No. 2 has two vertical General Electric generators of 17,500 K. W. each, driven by two Wellman-Seaver-Morgan turbines and governed by a Woodward governor.

The revolving elements on these machines weigh approximately 120 tons and revolve at 428 revolutions per minute, the entire weight being taken care of by a General Electric spring type thrust bearing.

Generator Voltage

The generator voltage is 6600, the same as in power plant No. 1, and is connected to two banks of transformers, then boosted to 110,000 volts to the transmission line.

There are two lines running into Los Angeles, transmitting the output of these two plants—approximately 800,000 K. W. per day.

The layout, workmanship and upkeep reflect great credit upon the men who were responsible for the construction and now the operation. A visit to the plants, according to the illuminating engineers, is well worth the time of any one who comes to Los Angeles.

C. C. Rubble, superintendent of generation, and Chief Operator Elliot were recipients of expressions of gratitude for the courteous attention accorded the illuminating engineers' party.

Arrangements for the trip were in charge of Walter Strohm.

Dored's Biography is Tale of Adventure

Dored and William Marshall Become A. S. C. Members

By Foster Goss

The Board of Governors announces that William Marshall and John Dored, both ace cinematographers, have been elected members of the American Society of Cinematographers. Their careers are replete with achievements. Both are acknowledged masters in their calling.

Marshall, a veteran cinematographer, bears the distinction, it is said, of the longest continuous service with any one producing organization, having been affiliated with Famous Players-Lasky for a period of nine and one-half years.

He filmed the first motion picture produced by the William Fox Company. Directed by Gordon Edwards, the cast of this early film effort included Betty Nanson and Ed Jose. Later Marshall photographed three Robert Mantell pictures for Fox and assisted in the filming of "A Daughter of the Gods," which starred Annette Kellerman.

Among the other productions that Marshall has photographed are "The Woman Thou Gavest Me," "Secret Service," "The Sheik," "Moran of the Lady Letty," "The Great Impersonation," "The Money Master," "The Bachelor Daddy," "Our Leading Citizen," "The Ghost Breakers," "The Faith Healer," "Sweet Lavendar," "Eyes of the Heart," "A Lady In Love," "Crooked Streets" and "Terror Island." He also filmed Irving Cummings, Claire Whitney, Crane Wilbur and Pearl White in many one-reelers for Pathe.

Among the celebrities he has photographed are Cyril Scott, William Farnum, Marguerite Clark, Billie Burke, Owen Moore, Hazel Dawn, Louise Huff, Mary Pickford, Lottie Pickford, Jack Pickford, Walter Heirs, Katherine MacDonald, Robert Warwick, Milton Sills, James Kirkwood, Bruce MacRae, House Peters, Ann Forrest, Pauline Fredericks, Ethel Clayton, Wanda Hawley, Wallace Reid, Elsie Ferguson, Theodore Roberts, Lila Lee, Harry Houdini, Rodolph Valentino, Agnes Ayres, Lois Wilson, May MacAvoy, Dorothy Dalton and other luminaries as well as productions "too numerous to mention," according to Marshall.

Marshall has been a cinematographer for thirteen years. His laboratory experience includes one year with the Comet Film Company and two years during which he was in charge of the New York Motion Picture Company laboratories.

At present he is filming "Chicago Sal" for Irving Cummings.

Dored's biography reads like a romance of adventure. He has closely followed, with his camera, the important happenings in the most eventful period of Russia's history and no doubt his celluloid records will be consulted generations hence. It is easily imaginable that his work will be the connecting link between a future age and the present.

A Russian, he was born in 1887 and educated in his native land. He possesses a college education. He is a linguist, being familiar with, besides the Russian, the English, French, German, Latvian and Polish languages.

Began in 1905

When the first foreign-made motion pictures appeared in Russia in 1902, Dored became greatly interested in the process of their production and determined to become a professional cinematographer. However, almost three years elapsed before his wish of 1902 was realized. In 1905, a friend gave him a recommendation to Charles Pathe, who was in Paris. Dored traveled to the French capital, where he was personally received by Pathe, who gave him an engagement in the largest Pathe-Freres plant in Joinville-le-Pont, near Paris. He later was transferred as second cameraman to the Pathe studio in Vincennes.

—because it's read

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the American Cinematographer covers a field in which it is the pioneer—and covers it thoroughly. you ask why this magazine is filed. the answer is simple—because it contains news and features of the technical side of the cinema industry, news and features which the the readers KEEP for future reference.

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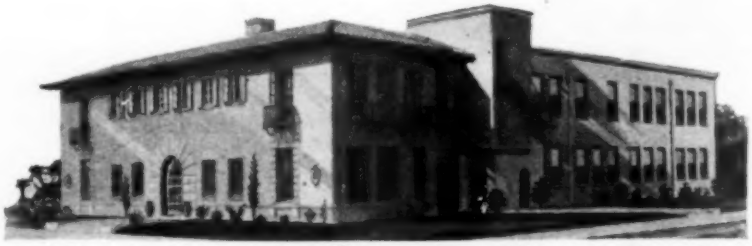

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Goes to London

In 1907, he went to London, where he became affiliated with Walturdaw Company, Ltd., and later with Hepworth Company, Ltd. It was in London that the desire overtook him to journey to America to widen his cinematographic knowledge. The opportunity soon presented itself and he came to the United States, entering the Pathe service again, this time at Brook, N. J. He was given charge of the negative department, and subsequently, the printing department.

A year later, through the late J. Chalmers, he accepted an offer from the newly-organized World Film Manufacturing Company in Portland, Oregon, to serve as cinematographer and as superintendent of the laboratory with that organization.

Arrive in Los Angeles in 1909

In 1909, Dored went to Los Angeles, where he was engaged as head cinematographer by the Selig Polyscope Company. He filled that position until 1911, when he became "homesick," he says, and returned to Moscow. While with Selig, he worked with the late Francis Boggs as director and subsequently with Hobart Bosworth. Among those he photographed at that time were Kathlyn Williams, Iva Shephard, Betty Harte, Herbert Rawlinson and Tom Santschi.

Lengthy Travels

Arriving in Moscow in October, 1911, he made preparations to begin activities in the educational field. In January, 1912, he opened his own laboratory in Moscow. After this he made lengthy trips over the widespread Russian territory, including Crimea, Caucasus, Khiva, Bucharia, Turkestan, Siberia and the Caspian region. He took his camera as far north as Nova Lemba in the Arctic ocean. He traveled through Egypt, Palestine, Greece, Turkey and Persia. His film subjects included ethnography, geography, zoology, industry and scenics. All his educational pictures were adopted for school use and had it not been for the war, a big future was assured for such film in Russia.

Becomes Official Russian Cinematographer

In May, 1914, Dored accepted an attractive offer to become official cinematographer for the government of Russia. Assuming his duties, he went to St. Petersburg, where the government erected a studio and a laboratory under his direction. Productions of a patriotic theme were made and distributed commercially for the benefit of Russian war invalids and their families.

Made Military Cinematographer

Dored had photographed four of such productions when the war broke out. He enlisted as a volunteer in the army and was assigned as chief government war cinematographer. He elected to film activities on the Caucasus front, where he moved about from 1914 to 1917. He photographed the maneuvers of the Black Sea navy as well as aeroplane and land battles in the Trans-Caucasia. He went through Turkey as far as Persia. He was at liberty to move about as he saw fit, and at all times chose the front where, he admits, the danger was the greatest.

Returns to United States

After the revolution he was recalled to Petrograd. In May, 1917, the provisional government assigned him as a member of the first Russian mission to America. His duties were to exhibit, in the United States, Russian war pictures, most of which were filmed by himself on the Caucasus front. In America he had accomplished all that was expected of him and was prepared to return to Russia when the counter revolution broke, putting the Bolsheviki in power.

"But who," Dored writes, "realized at that time what Bol-

(Continued on page 21)

Dependable, because every print takes all the quality that is in the negative and carries it through to the screen.

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Graininess in Motion Picture Positives and Negatives

(Continued from page 8)

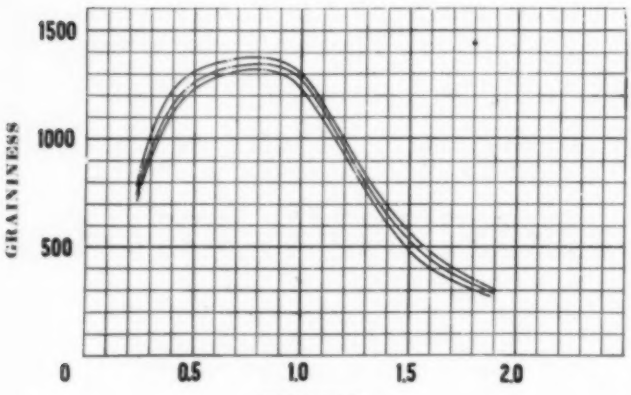

Fig. 5—Curves illustrating the precision of the method of measuring graininess

the optical density is shown in Fig. 4. It will be seen that the graininess of the low densities is low, and that the graininess increases to a maximum near the third step and then decreases with further increase of the density.

This agrees exactly with the findings of the more tedious process of making photo-micrographs of each step for examination. A number of tests of this nature have proved conclusive'y that this instrument does measure "graininess" as the term is used by the photographer. The method also has the additional advantage of being extremely rapid and of giving quantitative results which are specifiable numerically.

Methods Tested

The precision of the method was tested by making graininess measurements on a typical sensitometric strip every day for several weeks. From the departures of the individual settings from the mean of all the observations, the probable error of a single setting can be calculated. These results are represented graphically in Fig. 5. The middle curve shows the mean graininess values for each step calculated from all the observations and plotted as a function of the density. Assuming that all the errors were positive and equal to the probable error, the upper curve is obtained by adding the errors to the mean values. Assuming the errors to be all negative, the lower curve results from subtracting the errors from the mean values. We have then two extreme curves within which the probability of occurence of a single setting is just one-half. It will be noticed that the probable error for the maximum of the curve, which is usually the portion of most interest, is in the neighborhood of two per cent or approximately of the same magnitude as the other constants of photographic materials such as speed, latitude, etc.

Application For Camera

Having found what seemed to be a satisfactory method of measuring graininess, the next step was to apply the instrument to the actual problems confronting the motion picture industry. The first point investigated was the effect of the exposure of the negative material on the graininess of the finished product.

(Continued in December Issue)

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Percy Hilburn is Chief Cinematographer f Barker Productions.

Due to an error in proofreading, the name of Perc Hilburn, chief cinematographer for Reginald Barker Pr ductions for Louis B. Mayer, was omitted from the story "Twenty Cameras for Forest Fires," which appeared i the October number of the American Cinematographe It is regrettable that this error occurred since Hilburn, a director of photography for this production, deserves full est credit for the capacity in which he served in the film ing of these important and dangerous scenes.

CINEMATOGRAPHER IS AUTHOR

Don Short, A. S. C., has demonstrated that he is an autho as well as a cinematographer of the first water. He is th author of the original screen story, "While Justice Waits," in which Fox is starring Dustin Farnum. In addition, Shor is photographing the vehicle.

GRIFFIN IN NEW BRUNSWICK

Walter Griffin, A. S. C., is shooting a Hartford productio in a city which Phil Whitman, A. S. C., terms "the coldest in the world"—St. John, New Brunswick. This is Griffin's second production for Hartford.

Phil Whitman, A. S. C., has been working 25 hours a day in conjunction with the filming of "Merry Go Round" at Universal City. More hours in the day to you, Phil.

* * *

George Benoit, A. S. C., is photographing "Brass," which Sidney Franklin is directing for Warner brothers.

* * *

Allen Davey, A. S. C., will photograph the next Stuart Paton production for Universal.

* * *

George Barnes, A. S. C., has completed filming of "Peg O' My Heart," starring Laurette Taylor at Metro.

* * *

L. Guy Wilky, A. S. C., has finished photographing William de Mille's "The Roads of Destiny."

* * *

Andre Barlatier, A. S. C., lays claim to being the most distinguished man in Southern California at present. After waiting, pining and longing for eleven long months he is the proud possessor of a telephone. To live in Los Angeles is to appreciate his achievement. If any one has doubts as to his claim, the number is 436067.

* * *

Charles Rosher, A. S. C., is making preparations for the filming of "Dorothy Vernon of Haddon Hall," Mary Pickford's next production.

* * *

Walter Lundin, A. S. C., is vacationing following the completion of filming of "Safety Last," starring Harold Lloyd.

* * *

Much of the success of Snub Pollard comedies which have been increased to two-reelers from one-reelers is attributed to the photography of Robert Doran, A. S. C.

* * *

Joseph Brotherton, A. S. C., is photographing "The Scarlet Lily," starring Katherine MacDonald.

* * *

Jack McKenzie, A. S. C., is preparing for the filming of "Rock of Ages," starring Jane Novak.

* * *

Postcard from Jackson Rose, A. S. C., carries information that he has enjoyed first swim at Waikiki Beach, Honolulu. Rose is shooting a comic travelogue.

* * *

Joseph Aller, vice president of the Rotchacker-Aller plant in Hollywood, has left for England on his first vacation in 10 years. He, however, will be very active on Rothacker affairs while abroad.

Dored's Biography is Tale of Adventure

(Continued from page 19)

shevism really is? We did not know that it was the greatest menace to humanity ever known. After waiting awhile, I returned to Petrograd, and fell straight into the hands of those international crooks, called the Bolsheviki."

"Shoot" or Be Shot

None of the officials who had sent him to America remained in the war department when he arrived. The officials that he did find, Dored writes, made him the following proposition:

"Do you want to be our official war department cameraman or do you want to be shot at once?"

Not being overly desirous of being caressed by a Bolsheviki bullet, Dored chose the former. The following day he was despatched to the war commissary in Moscow.

"This commissary," according to Dored, "was just starting on a trip all over Soviet Russia for the organization of the Red army. He had his own brain and I had to go along with him. Thus I traveled with that commissary for a year and a half and, for a time, with the chief bandit, Trotzky."

More Battles

Dored photographed the activities of Red army units, special meetings; he filmed battles between the partisians, the Slovaks and the Russian Whites.

During this entire period he was awaiting a chance to escape the Reds and join the White army which was campaigning in South Russia.

His chance came on July 7, 1919, in the city of Kiev. The Whites were advancing and the Reds evacuating. He fled from a Red river steamer and hid for two days among the gardens of the community until the Whites had occupied the entire city.

Camera Loses Out to Gun

Dored dropped the camera, enlisted in the White army, and picked up a gun to fight the "enemies of my country," as he terms the Bolsheviki. When the White army was defeated and retreating to Poland, the fighting cinematographer was stricken with typhus and smallpox. For two months he lay in a hospital in Lemberg, Polish Galicia.

At the Front Again

When he finally recovered, he became affiliated with the Polish government as official cinematographer. Again he went to the front and filmed more war material.

In October, 1920, after Poland had signed peace documents, he proceeded to Riga, Latvia, his present headquarters.

He launched into the free-lance field, doing special work for Pathe News. He is covering news events in the Baltic states and departs frequently on expeditions to Finland, Estonia, Likurania and Poland. In addition, he is superintending the laboratory work for Pathe in his territory.

MINOR MAY ENTER FIELD FOR MANUFACTURE OF LENSES

Under a patent covering important points in lens making issued to him November 30, 1920, C. C. Minor, it is reported, will shortly begin the manufacture of lenses in Los Angeles.

In line with the discoveries for which the patent was issued, the lenses to be manufactured will be of the ultra-astigmat grades.

"Ultra-astigmat," Mr. Minor said recently, "is a coined word which may be defined as follows: 'ultra,' beyond or going beyond others, and 'stigmat,' a photographic lens, stigmatically corrected, and in such a manner that rays of light from one point are brought to a single focal point.

"In the ultrastigmat lens, this condition is attained for a much larger relative aperture and angle of covering power, than has heretofore been possible, hence its name—'ultrastigmat,' a true astigmat.

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embodied in a set of four simple lens elements of particular and relative position, constituting as such the lens system, and set forth in detail in the patent application which I filed in 1916 and which was issued me on November 30, 1920.

"The gaining of this double object of both extreme aperture, and extreme covering power at one and the same time, has resulted in the production of what is considered by many as the most ideal lens possible, and is rapidly being learned and appreciated. This is now being used by many cinematographers for general work and at all such stops as F 4.5, F 3.5, etc., having in reserve the extra speeds of F 2.7, F 2.3 and F 1.19."

The relation of these several speeds to each other is as follows: F 1.9 is almost three and one-half times greater than F 3.5; F 2.3 a little more than one-half faster than F 3.5. These lenses have been in use for six years in this country and abroad, it is said.

Hunting Whales With Cameras

(Continued from page 6)

whaling methods which prevailed a generation ago.

Evolution In Whaling

"We thought," Kurrle said, "that it would be an easy matter to charter any kind of wooden ship that we might need, but we were wrong. The whaling of today is done in smaller boats, which have a maximum length of 55 to 60 feet. But the 'Carolyn Frances' is a 100-foot two-master. The change from the larger to smaller boat was brought about with the advent of the harpoon, which is shot from a gun mounted in the bow. In the old days, the seamen set out in small boats from a mother ship like the 'Carolyn Frances' when they went after their prey. Their harpoons, then, you see, were fired from rifles and did not have the range of the harpoons fired from the gun, such as is used today. But the big schooners like the 'Carolyn Frances' could not slip up on the whale, which would be scared out of range at their aproach. Therefore, until more powerful guns made the smaller all-around hunting boat possible, the very light and small 'children craft' had to be used for the actual bagging.

Rough Sea Riding

As tumultous as their passage and filming had been on the 55 and 60-foot modern whaling boats at Trinidad, Kurrle and his companions encountered even more severe conditions in photographing a whale chase from "child" craft.

Dead Engine—Dead Men!

It was after Kurrle and his party, which included Maurice Kain, Curt Rehfeld, "Bud" Erickson and Roy Moyer, had left such a craft and transferred to a tug boat that an accident, which easily could have developed into serious consequences, was narrowly averted. They had left the "Carolyn Frances," which they were to film from various angles. While Director Willat, members of the cast and the crew were aboard, they, in accordance with the continuity, secreted themselves so that they were not visible from the sea. The "shots" were to be of the ship only.

All progressed smoothly until suddenly the engine of the tug boat went dead. They drifted broadside directly in the path of the schooner, which was coming full-sail ahead.

The attention of those aboard the "Carolyn Frances" had to be attracted.

There was nothing to do but yell.

Everybody on the tug boat did.

At last those aboard the schoner heard. The pilot pulled mightily on his wheel.

"Well," according to Kurrle, "the 'Carolyn Frances' missed us by no less than six inches, believe it or not."

Figure It Out

What might have happened is indicated in the clash between two of the schooner's 20-foot whale-pursuing boats, which were manned by 14 members of the "Carolyn Frances'" crew. Over an exceedingly rough sea, the 20-

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footers were following the wake of a whale which was the target for harpoons fired by the crew from 40-pound rifles. The light craft churned on, keeping at a reasonably safe distance from each other. Behind, Kurrle was filming proceedings on the tug, whose engine had gone dead a few days before.

Without warning, the 20-foot boats crashed into each other. The bow of one was crushed. Both capsized. Fortunately, the tug was near, and the crew and Robert McKim, who was the only actor in the whale boats, were within a few moments safely aboard the tug.

"And the camera got it all," Kurrle asserted, unquestionably elated.

Miniatures and Models for Motion Picture Use

(Continued from page 13)

A, B, C, D, in such positions and of such length that if they are screwed all the way in the ends will meet at the center of the frame. The ends of the clamping screws are not threaded, but fit into a suitable recess in each clamping block. In each of the clamping blocks there is a groove wide enough to accommodate the edge of the plate glass.

Plate Glass Is Adjustable

It will be seen that by means of these four clamping screws the plate glass E can be placed and held in almost any desired position within the frame. The miniature detail to be introduced is painted in a suitable position and of suitable size on the plate glass and is brought into exact position with relation to the main scene by adjusting the holding clamps. Surrounding the wooden frame on both back and front is a wire frame, I, 6½ feet square. This is intended to carry the usual gauze or other diffusing media when necessary.

Diffusing media give very different results, according to whether they are placed on the front of the frame, that is to say, between the lens and the miniature, or at the back of the frame between the miniature and the main scene. The illusion of distance and atmospheric haze can be very satisfactorily rendered by proper choice and placing of a suitable diffusing medium.

Uses of Wire Frame

The wire frame, in addition to carry diffusing media, is useful for a number of other purposes. For instance, window effects, curtains or cut-outs imitating the lookout from a cave, glimpses between rocks, prison bars, can be suitably mounted upon this framework and, according to the way they are illuminated, painted or cut-out, may be made to give results all the way from a black silhouette through to full detail.

It might be desirable to construct the device in sections so that it can be taken apart for ready transportation to location. In practice it has been found that for nearly all work three feet by three feet is big enough for the plate glass, although under some conditions of size and distance glasses four feet by four feet or five feet by five feet may be used. If constructed models are used, then the clamping screws are withdrawn to the edges of the frame and the model suitably suspended in the frame so that the means of suspension do not appear in the field of view. The whole device must be rigidly and heavily constructed so that it is steady, for movement would seriously impair the results. The illustration is not drawn to scale, as it is merely intended to be schematic.

Colors For Plate Glass

In the case where the miniature detail to be introduced is painted upon plate glass the surface of the plate glass should be approximately plain, so as not to interfere with the optical performance of the lens, for, of course, we are photographing the main scene through the unobstructed portions of the plate glass. The miniature for most work should be painted with a neutral grey pigment, which must

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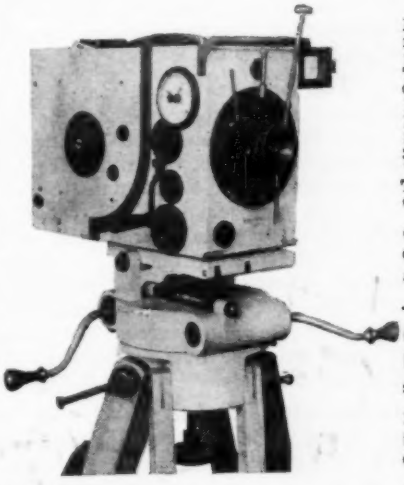

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be opaque. In a few cases it may be necessary to paint the miniature in some other color in order to properly blend in with the main set. In the case of a constructed model the details of the main set must be faithfully reproduced so as to insure proper joining on or blending in.

Plate Glass Must Not Reflect

The lighting of the miniature or model is also quite important and probably the best method is to have a separate light source placed behind the camera. In the illustration the end view shows the relative position of light source, camera and frame. Care must be taken so as to arrange the light source in such a manner that the plate glass does not act as a mirror or reflector, in other words, the miniature must be illuminated with approximately 45 degrees light.

The light source used is unimportant; it may be mercury vapor, arc or tungsten. Provision, however, should be made for moving the light in relation to the miniature held in the frame, so as to be able to light it from either one side or the other and from different distances. The lighting of the miniature controls the results. For instance, the miniature may be illuminated with a comparatively subdued light and will then blend into the composition as a minor detail, or it may be illuminated so as to have the same photographic value as the main set and, therefore, blend in as an almost perfect match with the surrounding scene and if the illumination of the miniature is quite intense it may be made to stand out as a high spot in the composition. If the device is used on location the lighting of the miniature or model can be controlled by a small diffusing screen for subdued effects or a reflecting screen for more intense illumination, and this fitting can readily be attached to the frame in a suitable manner and position.

An Example

Now let us consider a working example: Supposing the scenario calls for a stretch of river showing a portion of a famous bridge in the near distance. If this distance be 320 feet away and we place our miniature five feet away from the camera, then the size or image ratio is one to 64. With a two-inch lens focused on the river 320 feet away we shall include 160 feet of the width of the river, so that our miniature details of the bridge must have a base line of about 2½ feet and be correctly placed in the optical path so as to appear to span the river properly.

The Size

In laying out the details of a miniature or model the size necessary is determined by the focal length of the lens and the distance from the camera at which the miniature will be placed. It is a very simple matter to calculate the size necessary, but it can be done more easily in a direct manner. All that is necessary is to place a graduated strip (one-inch divisions) across the frame G and at the chosen distance from the camera include the graduated strip in the field, viewed against the objects in the main scene. It will at once be shown on the focusing screen how many scale divisions cover a desired base line or width in the main scene or object at any distance.

Introduction of Detail

The introduction of detail by means of miniatures or models is best done with lenses of not more than 2½ inches focal length. In fact, the real success of this work depends on the great depth of field of a short focus lens, and depth of field rapidly diminishes with increasing focal length. The more the lens can be stopped down the better the results. There are a number of other uses for the device described. It is possible to make very beautiful pictorial titles, either still or animated, by a combination of miniature detail and main background. It is almost impossible to give any definite instructions for using the device, any skilled cameraman will at once recognize its possibilities and its limitations. Successful results will depend on the combined skill and ingenuity of the artist, the lighting expert, the cameraman and the director.

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RELEASES

September 23rd to October 22nd, 1922

TITLE	PHOTOGRAPHED BY
"Broadway Rose"	Oliver T. Marsh
"Timothy's Quest"	Gene French
"Manslaughter"	Guy Wilky, member, A. S. C., and Alvin Wyckoff
"Missing Millions"	Gilbert Warrenton, member A. S. C.
"More to Be Pitied Than Scorned"	Gilbert Warrenton and King Gray, members A. S. C.
"Confidence"	Howard Oswald
"Do and Dare"	Dan Clark
"Headin' North"	Not credited
"The Cub Reporter"	Harry Fowler, member A. S. C.
"Rags to Riches"	Floyd Jackman and E. B. Du Par, members A. S. C.
"Under Two Flags"	William Fildew, member A. S. C.
"June Madness"	John Arnold, member A. S. C.
"Pink Gods"	Paul Perry, member A. S. C.
"Deserted at the Altar"	Glen McWilliams
"The Long Chance"	Benjamin Reynolds, member A. S. C.
"The Girl Who Ran Wild"	Allen Davey, member A. S. C.
"The Mohican's Daughter"	Oliver Marsh and Lester Lang
"Mixed Faces"	David Abel, member A. S. C.
"The Old Homestead"	Karl Brown, member A. S. C.
"Trifling Women"	John F. Seitz, member A. S. C.
"The Man Who Played God"	Harry Fischbeck
"On the High Seas"	C. Schoenbaum, member A. S. C.
"A Woman's Woman"	Jacques Bizuel
"Skin Deep"	Charles Stumar, member A. S. C.
"The Man She Brought Back"	Lawrence Williams
"Notoriety"	Not credited
"Calvert's Valley"	Don Short, member A. S. C.
"A Bill of Divorcement"	Not credited
"The Bond Boy"	Roy Overbaugh, member A. S. C.
"The Lone Hand"	Virgil Miller, member A. S. C.
"The Face in the Fog"	Ira H. Morgan, member A. S. C., and Harold Wenstrom
"Thundering Hearts"	O. G. Hill
"The Ladder Jinx"	Irving Ries

E. B. Du Par, A. S. C., is photographing "The Little Church Around the Corner," directed by William Seiter for Warner Brothers. He has just finished filming "The Beautiful and Damned."

* * *

C. Edgar Schoenbaum, A. S. C., is photographing "Nobody's Money," starring Jack Holt.

* * *

George Schneiderman, A. S. C., has begun filming of "Pawn Ticket No. 210," starring Shirley Mason. He has just completed a special feature production with Henry B. Walthal and all-star cast.

* * *

Victor Milner, A. S. C., is photographing "Madonna of Avenue A," directed by King Baggot and featuring Gladys Walton.

* * *

Al Gilks, A. S. C., is nearing the completion of "My American Wife," starring Gloria Swanson and directed by Sam Wood.

* * *

In a recent production, in which a feminine player was featured, Steve Smith, Jr., A. S. C., uncovered the following: One of the leading male members of the cast was speaking "sign" language to the assistants. Smith "smelled a rat" when he observed the player in question, when on the set, raise one finger as if signalling, later two and after that, three fingers. Investigation by Smith revealed that one finger was signaling for a long shot, two fingers for a medium close-up, and three for a close-up. Each finger likewise signified a dollar for the assistant who would arrange for the "shots" which the enterprising actor "ordered." Smith is finishing "Ninety and Nine," Vitagraph production with Colleen Moore and Warner Baxter.

* * *

John Arnold, A. S. C., took his Belgian police dog, "Pal," with him when he went to Big Bear Lake, Calif., to photograph location scenes for "Miss Emmy Lou," starring Viola Dana and directed by Harry Beaumont. Being, as always, a very busy cinematographer, John did not have time to enjoy in the accepted way the reputed excellent fishing of the lake, as all visitors there seek to.

"We went out in a boat every morning," Arnold vouches, "and when I had rowed about 100 yards I would shake some snuff on the water. The stuff sank gradually and, of course, it had its effect on the fish. When they came up to sneeze, 'Pal' would jump out of the boat, grab them and bring them back to me."

This, Arnold maintains, "Pal" will corrobate. Tell us another one, Johnny; tell us another one.

* * *

Lyman Broening, A. S. C., and Karl Brown, A. S. C., are filming buffalo chases, Indian attacks and general Western action in Utah and Nevada with Paramount's "The Covered Wagon" company.

* * *

James Van Trees, A. S. C., is manipulating a camera on the brim of the volcano Kilauea, among other exciting operations in his stay in Honolulu for the filming of "The White Flower," directed by Julia Crawford Ivers.

* * *

L. Guy Wilky, A. S. C., is completing the filming of William De Mille's "The World's Applause."

Reggie Lyons, A. S. C., has sold his Renault, French automobile, and procured a Hudson sedan instead. Let's see—how many has Reggie in his kennels now? Oh, yes—a Napier and a Ford, too. How many 'steen cars have you had since you bought your first Buick in 1910, Reggie? No, if any one wants to know, Reggie does not carry the Ford in the Napier's toolbox for emergency and mud pulls. He carries the camera in the Ford.

* * *

Edward O. Blackburn is to join the Rothacker-Aller laboratories in Hollywood. He was formerly connected with the Rothacker office in New York.

* * *

Robert Newhard, A. S. C., thought that he would have one long rest when he decided to take a well-earned vacation. Instead, he has been kept busy dealing with offers which seek his sterling services as soon as he decides to cease vacationing.

* * *

Jackson Rose, A. S. C., has been called by attorneys for conferences concerning pioneer motion picture practices. This is in connection with the Ferdinand Earle-Norman Dawn legal action.

* * *

Harold O'Brien, member of the Society of Motion Picture Engineers, bears the distinction of designing the two largest portable power wagons ever built—1500 ampheres each. They are being used by the Paramount "The Covered Wagon" company.

* * *

Floyd Jackman, A. S. C., has been chosen as chief cinematographer for Gene Stratton Porter productions.

* * *

Due to the extended absence occasioned by the respective trips of James Van Trees and Gaetano Gaudio from Los Angeles, their places on the Board of Governors, A. S. C., have been filled by Arthur Edeson and Charles Rosher.

* * *

Marcel Le Picard, A. S. C., is in Los Angeles from New York. He will return East shortly.

* * *

Ernest Palmer, A. S. C., has returned to Los Angeles from England. He has re-joined John M. Stahl productions as chief cinematographer.

* * *

Cinematographers who have filmed the world's greatest motion picture players turned actors for the first time in their careers at a recent open meeting of the American Society of Cinematographers when they all appeared in the cast of a production, "The Stolen Gem," directed by Philip E. Rosen, A. S. C., photographed by James Van Trees, A. S. C., and written especially for the occasion by Percy Heath.

The action was laid in the clubrooms of the "Connoisseurs' Club"—in the Francis Ford studios, Hollywood. Arthur Edeson acted as the owner of the precious gem, and Reginald Lyons was amiable as the villain. The picture was developed by the Standard Laboratories, and shown at a subsequent A. S. C. meeting.

* * *

Harry Brown, chief of the Metro electrical department and president of the Society of Illuminating Electrical Engineers, addressed a recent open meeting of the American Society of Cinematographers on the relation between the studio electrician and the cinematographer. His subject was well chosen and warmly received by all those present.

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Brodin, Norbert F.—
Bergquist, Rudolph J.—with Metro Studio.
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Brown, Karl—with James Cruze, Lasky Studio.
Cann, Bert—With Eddie Polo, Europe.
Cowling, Herford T.—Travel Pictures, Europe.
Cronjager, Henry—with Madge Kennedy, New York City.
Davey, Allen M.—
Dean, Faxon M.—with Lasky Studio.
Depew, Ernest S.—with Al St. John, Fox Sunshine.
Doran, Robert S.—with Charles Parrott, Roach Studio.
Dored, John—Scenic, Russia, Pathe.
Dubray, Joseph A.—with R-C Studio.
DuPar, E. B.—with Warner Brothers.
Du Pont, Max B.—
Edeson, Arthur—with Douglas Fairbanks, Fairbanks-Pickford Studio.
Evans, Perry—with Mack Sennett Productions, Sennett Studio.
Fildew, William—with Universal.
Fisher, Ross G.—
Foster, Wm. C.—
Fowler, Harry M.—Joe Rock, Universal Studio.
Gaudio, Tony G.—with Marion Davies—Cosmopolitan Productions, New York.
Gilks, A. L.—with Sam Woods, Gloria Swanson, Lasky Studio.
Good, Frank B.—with Jackie Coogan, United Studio.
Granville, Fred L.—directing, British International Corp., London.
Gray, King D.—Hallroom Boys Comedies.
Griffin, Walter L.—with David M. Hartford Prods.
Guissart, Rene—with Harley Knoles in charge of photography, London.
Heimerl, Alois G.—
Jackman, Floyd—with Gene Stratton Porter Productions, Ince Studio.
Jackman, Fred W.—Supervising Cinematographer, Mack Sennett Studio.
Klaffki, Roy H.—Director of Photography, Metro Studio.
Kline, Ben H.—with Universal.
Koenekamp, Hans F.—with Larry Semon, Vitagraph Studio.
Kull, Edward—Directing at Universal.
Kurrle, Robert—with Metro Studio.
Lockwood, J. R.—
Lundin, Walter—with Harold Lloyd, Roach Studio.
Lyons, Reginald E.—
MacKenzie, Jack—with Chester Bennett, United Studio.
MacLean, Kenneth G.—Hampton Del Ruth, Balboa Studio.
Marshall, William—
Meehan, George—with Charles Ray, Ray Studio.
Miller, Virgil E.—with Universal.
Milner, Victor—with Universal.
Morgan, Ira H.—with John Barrymore, Europe, International.
Newhard, Robert S.—
Norton, Stephen S.—
Overbaugh, Roy F.—with Richard Barthelmess, New York City.
Palmer, Ernest S.—John Stahl, Mayer Studio.
Perry, Harry—with Tom Forman, Mayer Studio.
Perry, Paul P.—with Phil Rosen, Lasky Studio.
LePicard, Marcel—
Polito, Sol—with Edwin Carewe, New York.
Reynolds, Ben F.—with Universal.
Rizard, Georges—with Charles Ray, Ray Studio.
Rose, Jackson—Honolulu.
Rosen, Philip E.—Directing, Lasky Studio.
Rosher, Charles—with Mary Pickford, Pickford-Fairbanks Studio.
Schoenbaum, Chas. E.—with Lasky Studio.
Schneiderman, George—with Fox Studio.
Scott, Homer A.—
Seitz, John F.—with Rex Ingram, Metro, Florida.
Seigler, Allen—Fred Niblo, Mayer Studios.
Sharp, Henry—with Ince, Ince Studio.
Short, Don—with Fox Studio.
Smith, Steve, Jr.—with Vitagraph Studio.
Stumar, Charles—
Totheroh, Rollie H.—with Charlie Chaplin, Chaplin Studio.
Van Trees, James C.—with Lasky Studio.
Van Enger, Charles—with Maurice Tourneur, Goldwyn.
Walter, R. W.—with Mack Sennett Productions, Sennett Studio.
Warrenton, Gilbert—with Alice Brady, Lasky, in New York.
Whitman, Philip H.—with Universal, Experimental Department.
Wilky, L. Guy—with William De Mille, Lasky Studio.

Dexter, G. R.—Attorney.
Paley, William "Daddy"—Honorary Member.
Thomas A. Edison, Honorary Member.

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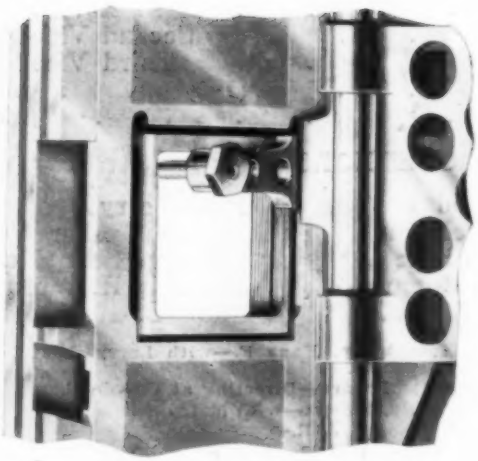

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